Notice of Allowability	Application No.	Applicant(s)	
	10/756,986	PHATAK, SHIRISH HEMANT	
	Examiner	Art Unit	
	Luke S. Wassum	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Applicant's amendment filed 6 February 2006*.

2. ☒ The allowed claim(s) is/are *1-26*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
   1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Luke S. Wassum
Primary Examiner
Art Unit 2167

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6 February 2006 has been entered.

Response to Amendment

2. The Applicant's amendment, filed 6 February 2006, has been received, entered into the record, and considered.

3. As a result of the amendment, claims 1, 11, 15, 17 and 18 have been amended, and new claims 23-26 have been added. Claims 1-26 are now pending in the application.

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Davy E. Zoneraich on 24 April 2006.

The application has been amended as follows:

1. (Currently amended) A method for managing shared access to data files stored in a file server by a plurality of authorized computer workstations, the method comprising:

supplying to a first storage cache a copy of a data file retrieved from the file server by a cache server for reading or updating, wherein the first storage cache is associated ~~for associating~~ with a plurality of first authorized computer workstations and stores the copy of the data file as a cached data file;

at the first storage cache, incorporating data file modifications entered by any of the first workstations into the cached data file as the modifications are entered, such that the cached data file is a current version;

automatically transmitting file update data from the first storage cache to the cache server, wherein the file update data is a function of the modifications incorporated into the cached data file which make the cached data file the current version; and

at the cache server, generating a replacement version of the data file stored at the file server based on the file update data.

11. (Currently amended) A method for managing shared access to data files stored in a file server by a plurality of authorized computer workstations, the method comprising:

automatically transmitting file update data from a cache server to a first storage cache in response to a workstation request for access to a data file which is stored at a file server associated with the cache server, wherein the first storage cache is ~~for associating~~ associated with a plurality of first authorized workstations, and wherein the file update data is a function of differences between the data file as currently stored at the file server or the cache server and a cached data file stored at the first storage cache and corresponding to the data file; ~~and~~

incorporating the file update data into the cached data file at the first storage cache such that the cached data file is updated to be the same as the data file currently stored at the file server or the cache server;

at the first storage cache, incorporating data file modifications entered by any of the first workstations into the cached data file as the modifications are entered, such that the cached data file is a current version; and

automatically transmitting file update data from the first storage cache to the cache server, wherein the file update data is a function of the modifications incorporated into the cached data file which make the cached data file the current version.

14. (Currently amended) The method of claim 11, wherein the automatically transmitting and the incorporating the file update data steps are performed at predetermined intervals.

17. (Currently amended) A system for managing shared access to data files

stored in a file server by a plurality of authorized computer workstations, the system comprising:

a cache server for coupling to the file server;

a plurality of storage caches for accessing data files stored in the file server by establishing a communications connection with the cache server,

wherein each of the storage caches is for associating with a plurality of workstations and incorporates data file modifications entered by any of the corresponding associated workstations into the cached data file as the modifications are entered, such that the cached data file is a current version;

wherein each of the storage caches automatically transmits file update data to the cache server, wherein the file update data is a function of the modifications incorporated into the cached data file at the storage cache which make the cached data file the current version; and

wherein the cache server includes a leasing module, wherein the leasing module decides whether to grant or deny a request for a lease for a data file received from a first of the storage caches based on whether a, and what type of, lease already exists for the data file or whether the data file is already locked, wherein the decision is made in accordance with criteria that a write lease cannot be granted if a read lease already exists, only a reader right can be granted if a write lease already exists and an additional read lease can be granted if a read lease already exists; and

wherein the cache server automatically performs steps to update the cached data file at the first storage cache if a reader right or a read lease is granted.

18. (Currently amended) A system for managing shared access to data files stored in a file server by a plurality of authorized computer workstations, the system comprising:

a cache server for coupling to the file server; and

a plurality of storage caches for accessing the data files stored in the file server by establishing a communications connection with the cache server,

wherein each of the storage caches is for associating with a plurality of workstations and incorporates data file modifications entered by any of the corresponding associated workstations into the cached data file as the modifications are entered, such that the cached data file is a current version;

wherein each of the storage caches automatically transmits file update data to the cache server, wherein the file update data is a function of the modifications incorporated into the cached data file at the storage cache which make the cached data file the current version,

wherein each of the storage caches includes a leasing module for controlling whether a request for access to a data file from an associated workstation should be granted or denied, wherein the access request is a request to read or write a data file stored at the file server, and

wherein the leasing module performs the following steps following receipt of the request:

determining a lease condition for the data file existing at the storage

cache, wherein the lease condition is one of read, write and no lease;

granting the request if the request is read and the existing lease is read or write, or if the request is write and the lease condition is write;

requesting a new lease from the cache server if the request is read and the lease condition is no lease, or if the request is write and the lease condition is read or no lease,

determining at the cache server whether to grant a lease for a data file based on whether a, and what type of, lease already exists for the data file or whether the data file is already locked, wherein the decision is made in accordance with criteria that a write lease cannot be granted if a read lease already exists, only a reader right can be granted if a write lease already exists, and an additional read lease can be granted if a read lease already exists; and

performing steps to automatically update the cached data file at the storage cache based on the current version of the data file stored at the file server, if a lease is granted or the request is a read and, otherwise, denying the request.

Allowable Subject Matter

5. Claims 1-26 are allowed.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Maddalozzo, Jr. et al. (U.S. Patent 5,878,218) teaches a method and system for accessing the most recent version of a requested data file that has been downloaded into a private network from a source external to the private network.

Armbruster et al. (U.S. Patent 6,944,676) teaches a system for disseminating information over a wide area network and includes a central caching unit for storing data to be made available over the wide area network.

Carey et al. ("Data Caching Tradeoffs in Client-Server DBMS Architectures") teaches key performance tradeoffs related to client-server cache consistency.

Cox et al. ("Adaptive Cache Coherency for Detecting Migratory Shared Data") teaches that compared to conventional protocols, the use of an adaptive cache coherency protocol can almost halve the number of inter-node messages on some applications.

Cortes et al. ("Avoiding the Cache Coherence Problem in a Parallel/Distributed File System") teaches a new parallel/distributed file system that includes a cooperative cache that avoids the coherence problems while being highly scalable and exhibiting good performance.

Cortes et al. ("Design Issues of a Cooperative Cache with no Coherence Problems") teaches some important problems observed in the design of cooperative caches.

Wang ("A Survey of Web Caching Schemes for the Internet") teaches discusses elements of a web-caching system and desirable properties, and surveys the state-of-the-art techniques used in web caching systems.

Wu et al. ("Local Replication for Proxy Web Caches with Hash Routing") teaches controlled local replication for hash routing among a collection of loosely-coupled proxy web cache servers.

Luo et al. ("Middle-Tier Database Caching for e-Business") teaches a simple extension to the existing federated features in DB2 UDB, which enables a regular DB2 instance to become a DBCache without any application modification.

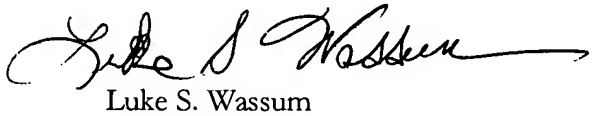
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke S. Wassum whose telephone number is 571-272-4119. The examiner can normally be reached on Monday-Friday 8:30-5:30, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on 571-272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

In addition, INFORMAL or DRAFT communications may be faxed directly to the examiner at 571-273-4119. Such communications must be clearly marked as INFORMAL, DRAFT or UNOFFICIAL.

Customer Service for Tech Center 2100 can be reached during regular business hours at (571) 272-2100, or fax (571) 273-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Luke S. Wassum
Primary Examiner
Art Unit 2167

lsw
24 April 2006